Math 111 Contemporary Mathematics
Fall 2015
Lecturer: Dr. Paullin

Name: Key

Graph Theory Day 7

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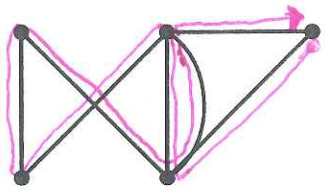
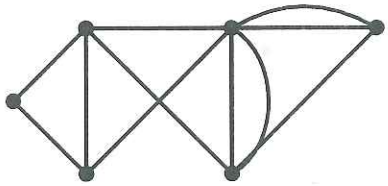
(1) Consider the graph:



Can you find a *circuit* that hits every edge without repeating any edges? Yes
What are the degrees of the vertices of this graph? 2, 2, 2, 4, 4

(2) Consider the graph:



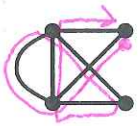
Can you find a circuit that hits every edge without repeating any edges? No
What are the degrees of the vertices of this graph? 2, 3, 3, 4, 4, 6

(3) Consider the graphs:

Yes 2, 2, 2

No 1, 2, 2, 3

No 2, 2, 3, 3

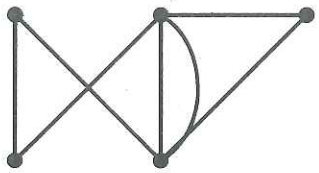


Yes 2, 2, 4, 4

In the graphs above, can you find a circuit that hits every edge without repeating any edges?
Find the degrees of the vertices of the graphs above!
Make a conjecture (or guess) about how to tell when you can get circuits to travel over every edge.

Euler circuits occur when all vertex degrees are even.

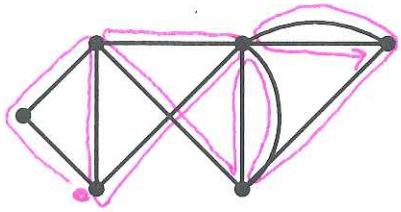
(4) Consider the graph:



Can you find a *path* (not a round trip!) that hits every edge without repeating any edges? No

What are the degrees of the vertices of this graph? 2, 2, 2, 4, 4

(5) Consider the graph:

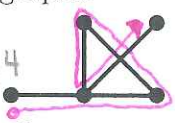


Can you find a *path* (not a round trip!) that hits every edge without repeating any edges? Yes

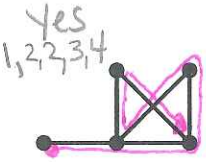
What are the degrees of the vertices of this graph? 2, 3, 3, 4, 4, 6

(6) Consider the graphs:

Yes
1, 1, 2, 2, 4



Yes
1, 2, 3, 3, 4



No
1, 1, 2, 3, 3, 4

In the graphs above, can you find a path that hits every edge without repeating any edges?

Find the degrees of the vertices of the graphs above!

Make a conjecture (or guess) about how to tell when you can get path to travel over every edge.

An Euler path occurs when there are 2 (and only 2) vertices with odd degree.